



Consumer and
Corporate Affairs Canada

Consommation
et Corporations Canada

(11) (A) No. 1152 011

(45) ISSUED 830816

(52) CLASS 190-38

(51) INT. CL. B65D 8/06,8/16,21/00

(19) (CA) **CANADIAN PATENT** (12)

(54) CONTAINER FOR STRONG DRINKS

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(21) APPLICATION NO. 378,515

(22) FILED 810528

(30) PRIORITY DATE Japan (79237/80) 800609

No. OF CLAIMS 3

Canada

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CCA-274 (11-82)

ABSTRACT OF THE DISCLOSURE

A container for strong drinks, comprising an outer shell made of a paper sheet coated on both sides with a plastic material and, inserted therein, an inner vessel made from a polyester resin having an intrinsic viscosity of 0.5 to 1.4, said outer shell and said inner vessel being joined together around their openings to form an integral brim.

1 This invention relates to a container for
strong drinks and, more particularly, to a container
for strong drinks, comprising an outer shell made of a
paper sheet coated on both sides with a plastic material
5 (hereinafter referred to as plastic-coated paper sheet)
and, inserted therein, an inner vessel made from a
polyester resin having an intrinsic viscosity of 0.5
to 1.4, said outer shell and said inner vessel being
joined together around their openings to form an
10 integral brim.

Japanese Utility Model "Kokai" (Laid-open)
No. 5,572/1974 has proposed as a substitute for glass
vessels a disposable vessel comprising a vessel made of
uncoated paper sheet and, inserted therein, a plastic
15 inner vessel having a thick rim and a thin-walled body.
Although suitable for the exclusive use as a receptacle
for soft drinks, such a container may arouse problems
when used for strong drinks. For instance, when filled
with hot sake (Japanese fermented liquor made from
20 rice) and then subjected to the showering treatment
which is an indispensable next step, it is liable
to become deformed owing to wetting of the paper sheet
which is an essential component of the container.
Moreover, depending upon the type of plastics selected
25 for the inserted vessel, the alcohol in the strong



1 drink exerts a solvent action upon the plastic vessel to
cause partial dissolution of some constituent of the
plastic material or partial transfer of its odor to the
strong drink resulting in deterioration of the flavor of
5 the latter.

Under such circumstances, the present inventors made various attempts to develop a convenient container for the strong drink, which, when filled with an strong drink and stored for a long period of time, 10 will keep the drink from permeation to the outside, odor transfer from the paper sheet or plastic material, contamination with the plastic material by dissolution and deterioration in delicate flavor, not to speak of an agreeable aroma, of the drink and, in addition, which 15 is improved in operational efficiencies in various phases of its handling such as filling, shipping, transportation and storing. It was found, as a result, that the above object can be achieved by constructing a container in such a way that an inner vessel made 20 from a polyester having an intrinsic viscosity of 0.5 to 1.4 is inserted in an outer shell made of a plastic-coated paper sheet and both inner vessel and outer shell are joined together around their openings to form an integral brim.

25 A few examples of embodiments of the invention are illustrated below with references to the accompanying drawings in which:

Fig. 1 is an elevation, in cross section, of a container according to the invention; and

30 Fig. 2 is an elevation, in cross section, of another embodiment of the invention.

Fig. 1 shows the case in which the polyester

1 vessel is inserted in close contact with the inner wall
of a plastic-coated paper sheet shell. In the Fig. 1,
1 is an outer shell made of paper sheet 2 coated on
both sides with plastic material 3 and composed of body
5 4 and bottom 5, both being jointed to form an integral
outer shell. 6 is a vessel made from a polyester
having an intrinsic viscosity of 0.5 to 1.4 and is
inserted in plastic-coated paper sheet shell 1 in
close contact with the inner wall of the latter. The
10 upper edge of body 4 of the plastic-coated paper sheet
shell is flared to form flat flange 7 and rounded rim
8. The upper edge of polyester vessel 6 is also flared
to form flat flange 9 approximating in pattern and size
to the flange 7 and rounded rim 10. Both shell and vessel
15 are assembled so that flange 9 is superposed upon flange
7 and the assembly is joined together by double
seaming to integrate the shell and vessel along rims
8 and 10.

In the above example of the embodiment, the
20 rims of both shell and vessel are in the form of flat
flange. However, the rims are not limited to the
flange form, but can be in beaded form. It is also
possible to effect the integration by joining together
the flanges of both shell and vessel with an adhesive
25 instead of the double seaming.

Further, although in the above example the
polyester vessel has a thick rim and a thin body wall
in contrast to body 4 of plastic-coated paper sheet

1 shell 1, other structures are possible. In joining
together the rims 8 and 10 by double seaming, the rim
of polyester vessel 6, no matter whether it is beaded
or in the form of flange, should have a thickness just
5 sufficient to withstand the operation of double seaming,
while the wall thickness of the body adjoining to the
rim can be as small as a thin film sufficient for
receiving the strong drink. Therefore, the construction
shown in the above example is preferred. One of the
10 suitable methods for fabricating such a polyester vessel
is so-called vacuum forming or pressure forming of
a polyester sheet having a thickness of the flange 9.
The structure of the plastic-coated paper sheet shell
is not limited to that illustrated in the above example
15 which is composed of the body and the bottom which are
produced separately and bonded together.

Fig. 2 shows an example in which some
clearance 11 is provided between the inserted polyester
vessel and the plastic-coated paper sheet shell. The
20 numerical notation is the same as used in Fig. 1.

The plastic material to be coated on both
sides of the paper sheet constituting the paper shell
used in the container of this invention may be freely
selected, because it does not come into direct contact
25 with the strong drinks.

The polyester vessel used in this invention is
made from a linear polyethylene terephthalate homo-
polymer or linear polybutylene terephthalate homopolymer

1 consisting of recurring units of ethylene terephthalate
or butylene terephthalate respectively, a copolymer
comprising a small proportion of comonomer units in
addition to the above recurring units, a blend of such
5 homopolymers or copolymers, or a blend of such homo-
polymer and such copolymer.

The comonomers include dicarboxylic acid
components such as isophthalic acid, adipic acid,
sebasic acid, p-β-hydroxyethoxybenzoic acid, and alkyl
10 ester derivatives thereof and glycol components such
as ethylene glycol, butanediol, hexamethylene glycol,
neopentyl glycol, and cyclohexanedimethanol.

The polyester vessel for use in the container
of this invention can be fabricated by the method
15 described in Japanese Patent Publication No. 5,107/1969
or No. 5,108/1969, in accordance with the use of the
container, or by any other suitable method.

The polyester resin to be used as the material
in fabricating the polyester vessel should have an
20 intrinsic viscosity in the range of from 0.5 to 1.4,
preferably from 0.6 to 1.2. If the intrinsic viscosity
is below 0.5, the resin has a low alcohol resistance
and is not suitable for the container intended for
long-term use; also, such a resin has a low impact
25 resistance. Accordingly the polyester vessel is
liable to become deformed even by a slight impact
exerted during the operation of inserting it into the
plastic-coated paper sheet shell. If, on the other hand,

1 the intrinsic viscosity exceeds 1.4, the moldability
of the resin becomes insufficient for the fabrication
of a vessel with uniform thickness. The intrinsic
viscosity given above is the value determined at 25°C
5 in a solution of a phenol-tetrachloroethane mixture
(1:1 by weight).

The strong drinks to be filled in the container
of this invention include sake, whisky, brandy, gin,
vodka, wine, cocktails, shochu and fruit wines such
10 as plum liqueur and others.

As fully described above, since the container
of this invention has an outer shell, including the
bottom thereof, which is made of a paper sheet coated
on both sides with a plastic material, the filled
15 container retains its original shape even after subjected
to the showering treatment which is a necessary step
for the container filled with sake at an elevated
temperature. When the sake packed in the container is
requested to be served hot, the filled container can
20 be directly immersed in hot water without any harm.

When the sake is intended to be served cold, the filled
container can be cooled or preserved in a refrigerator
without causing either condensation of moisture on the
outside surface of said container or deformation of
25 said container due to moisture absorption, because
the outer shell is made of a plastic-coated paper sheet.

The polyester vessel inserted in the plastic-
coated paper sheet shell is made from a polyester resin

1 having an intrinsic viscosity of 0.5 to 1.4, which is
2 excellent in mechanical properties and chemical
3 resistance, particularly in alcohol resistance. As a
4 consequence, the polyester vessel is substantially
5 inert to the solvent action of the alcohol contained
6 in the strong drink filled in the polyester vessel, the
7 dissolved amount of the polyester being too small to
8 affect the odor or taste of the drink. The polyester
9 vessel is free from the adverse effect of a plasticizer
10 or a residual monomer contained in the polymer on the
11 human body as is the case with a polyvinyl chloride
12 resin. Since the polyester vessel itself is odorless,
13 it causes no change in aroma and delicate taste of the
14 strong drink. Moreover, the polyester vessel has an
15 extremely low permeability to oxygen and carbon dioxide
16 and there is no fear of degeneration in the quality of
17 strong drink caused by these gases. Thus, it has now
18 become possible to preserve strong drinks for a long
19 period of time.

20 If a strong drink is filled in a container
21 made of a paper sheet overlaid on one side with a
22 plastic film, there will occur a phenomenon of oozing
23 of the strong drink from the jointed part of the
24 container, whereas the container of this invention is
25 entirely free of such a phenomenon.

The fabrication of the container of this
invention is performed with a high efficiency, because
it is carried out simply by assembling the plastic-

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1 coated paper sheet shell and the polyester vessel which
are separately provided and integrating the assembly
along the rims of both shell and vessel by a simple
means. The finished container is much lighter in
5 weight as compared with a glass vessel of the same
capacity, resulting in easier handling and improved
efficiency in shipping, transportation and storing. The
unprecedented features of the container are the outcome
of this invention.

WHAT IS CLAIMED IS:

1. A container for strong drinks, comprising an outer shell made of a paper sheet coated on both sides with a plastic material and, inserted therein, an inner vessel made from a polyester resin having an intrinsic viscosity of 0.5 to 1.4, said outer shell and said inner vessel being joined together around their openings to form an integral brim.
2. A container for strong drinks according to claim 1, wherein the inner vessel is inserted in close contact with the outer shell.
3. A container for strong drinks according to claim 1, wherein the inner vessel is inserted in the outer shell with a clearance therebetween.

FIG. 1

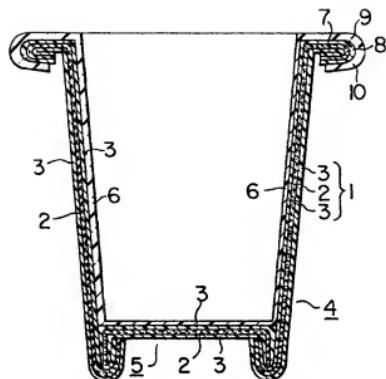
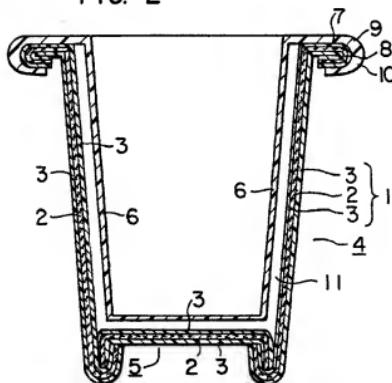


FIG. 2



Gowling & Henderson